



**COMPUTED TOMOGRAPHY OF THE  
REPRODUCTIVE SYSTEM**

**MAGNETIC RESONANCE IMAGING OF THE  
REPRODUCTIVE SYSTEM**

**2 nd stage**

***LECTUER 15***

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**MSc Radiographic Imaging**

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# COMPUTED TOMOGRAPHY OF THE REPRODUCTIVE SYSTEM

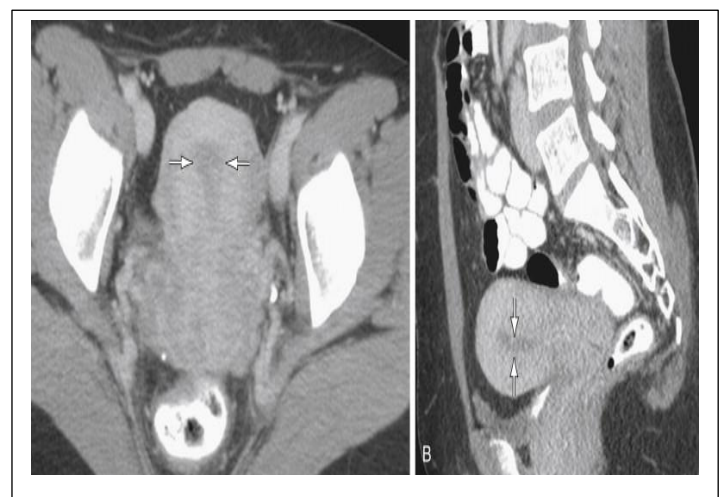
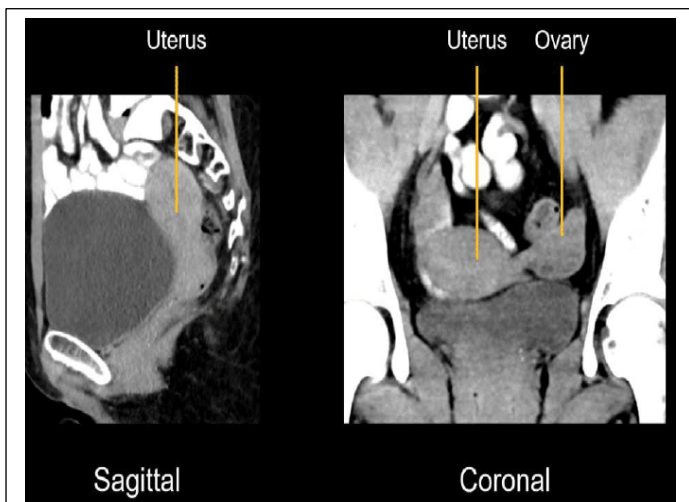


## Indications

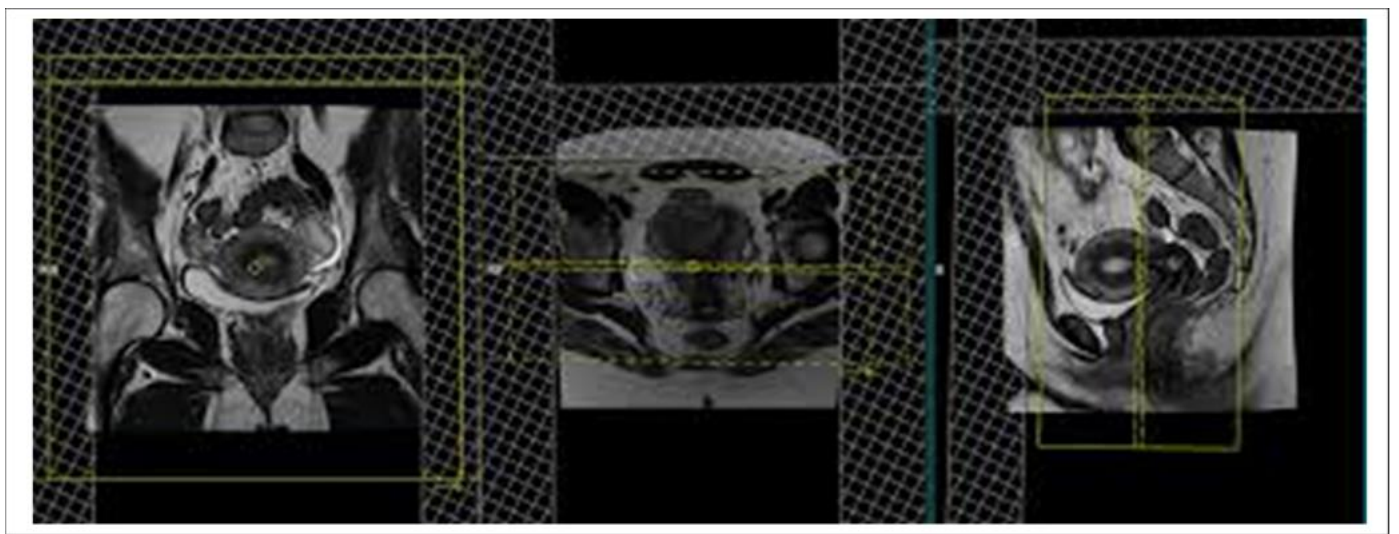
1. Staging ovarian, endometrial and cervical cancers
2. To evaluate causes of raised CA125 levels
3. In postoperative settings such as evaluation for intestinal obstruction or collections

## Technique

CT staging is usually performed with oral and i.v. contrast. Imaging of the abdomen and pelvis in the portal venous phase is the usual practice in most centres. The thorax may be scanned in the arterial phase, or alternatively single run thorax, abdomen and pelvis may be obtained in the venous phase, which has become more popular in many centres with the advent of faster scanners. CT is mainly used for staging of gynaecological malignancy but also in acute pelvic emergencies. Local staging in endometrial and cervical cancers is better performed with MRI. Characterization of ovarian mass lesions is also best performed with MRI. CT of the thorax, abdomen and pelvis is indicated in endometrial cancers with advanced local disease, aggressive histology and in sarcomas. CT of the abdomen may be indicated in assessment of cephalad extent of nodal disease in cervical cancer. CT of abdomen and pelvis is generally used for staging of ovarian cancer, and to assess nodal disease, peritoneal, omental and diaphragmatic disease. If pleural effusion is present, the thorax should also be imaged.



# **MAGNETIC RESONANCE IMAGING OF THE REPRODUCTIVE SYSTEM**



## Indications

1. Staging of cervical and endometrial cancer
2. Characterization of complex ovarian mass
3. Suspected Müllerian tract anomalies
4. Investigation of endometriosis
6. Assessment of pelvic floor
7. Scrotal MRI can be used to further characterize an US-demonstrated mass as intra- or extratesticular and to determine the location of intraabdominal undescended testis.
8. Localization and morphology of uterine fibroids prior to consideration for uterine artery embolization

## Artifacts

Artifact from small-bowel peristalsis and, to a lesser extent, colonic peristalsis can occasionally be a problem in the pelvis, and Buscopan 20 mg i.v. can be used to minimize this. Respiratory motion artifact is less of a problem in the pelvis than in the upper abdomen. Movement from anterior abdominal wall fat can be suppressed using a saturation band.

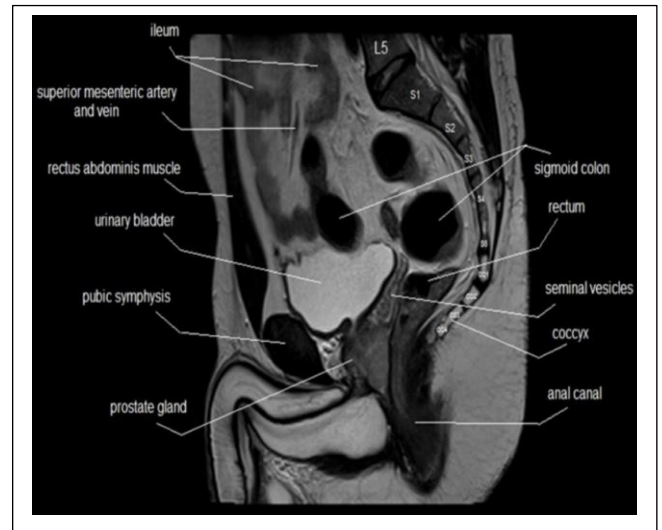
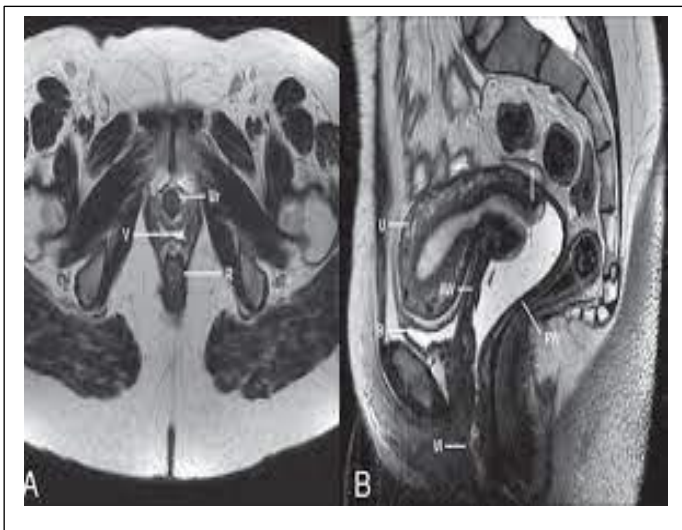
## Pulse Sequences

Multiparametric imaging is used currently in gynaecological malignancies, as in other areas of the pelvis. A combination of T2 weighted images and dynamic contrast enhanced magnetic resonance (MR) images, coupled with diffusion weighted images and apparent diffusion coefficient (ADC) mapping, increases the accuracy of diagnostic interpretation. For midline structures (uterus, cervix and vagina), sagittal T2-weighted spin-echo sequences can be supplemented with further axial sequences angled to regions of interest as required.

Inclined axial images perpendicular to the long axis of the uterus or the long axis of the cervix are helpful for uterine and cervical abnormalities, respectively. This technique is also mandatory for accurate local staging of uterine and cervical cancers. The ovaries can be assessed with axial T1-weighted and T2-weighted spin-echo sequences in three planes. T1-weighted

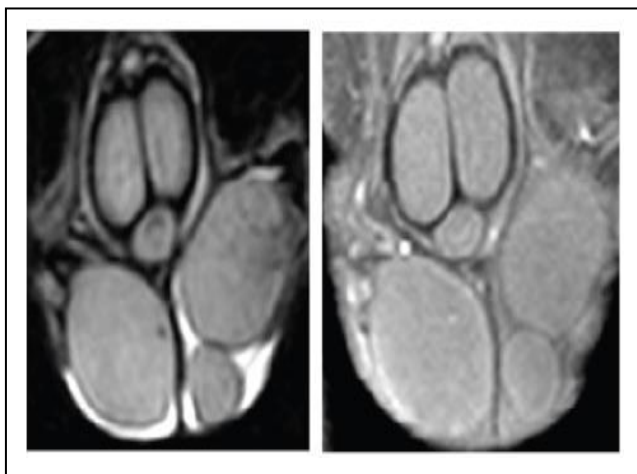
fatsaturated sequences are used to identify haemorrhage (e.g. within endometriomas) and to help characterize fat-containing masses.

Perfusion imaging of the uterus can be used to assess the effectiveness of uterine fibroid therapy. Diffusion weighted imaging can also be complementary to conventional T2-weighted images in assessing the extent and staging of gynaecological malignancy. Varying B values can be useful to assess restricted diffusion. Generally restricted diffusion is more suggestive of malignancy. MRI is also used to measure the pelvic outlet in pelvimetry, in order to avoid ionizing radiation.



## Scrotal Magnetic Resonance

This is generally performed with the scrotum supported as in US, using a surface coil. High-resolution axial, sagittal and coronal T2-weighted spin echo scans are obtained with a T1-weighted scan to identify haemorrhage. Large field-of-view (FOV) scans should be performed to assess the inguinal canal for the presence of a hernia. Gadolinium i.v. can be given if necessary to assess perfusion. Scans should include the pelvis and kidneys if



**GOOD LUCK**